

Hinge-lid packet for cigarettes

Description

The invention relates to a hinge-lid box, made of (thin) cardboard or similar packaging material, in particular for cigarettes, comprising a box part, lid and collar and having (upright) longitudinal edges and crosswise transverse edges.

5 Hinge-lid boxes are cigarette packs known worldwide. But hinge-lid boxes also represent a suitable packaging for use with other products, such as chocolates and candies.

Hinge-lid packs for cigarettes are known having rounded or beveled (upright) longitudinal edges of the box part and lid. With this shape of pack edges, the hinge-lid box is meant to conform to the outer contour of the pack's contents, i.e. a cigarette group.

10 The invention is based on the object of realizing the further development and improvement of hinge-lid boxes for cigarettes and other products in order that the resulting box design provides increased dimensional stability against mechanical loads.

15 To solve this object, the hinge-lid box according to the invention is characterized in that the longitudinal edges and/or transverse edges are configured by the deformation or embossing of the packaging material as an outwardly directed projection having a round cross-section or an inwardly directed recess having a round cross-section.

The projections and recesses are preferably configured as having a circular-shaped cross-section. The projection has cross-sectional shape of a three-quarter circle. The recess has the cross-sectional shape of a one-quarter circle.

20 This contoured design of the upright (four) longitudinal edges and/or the upper and lower transverse edges (for delimiting the end face and base wall) achieves a clear improvement in the dimensional stability of the pack against pressure loads. This also applies – depending on the arrangement of the projections or recesses – to longitudinal and transverse loads.

25 When the upright longitudinal edges are configured as a projection, the collar can be used which is configured with the conventional right-angled collar edge. Expediently, however,

the collar exhibits a corresponding contouring corresponding to the box part and lid in the region of the upright collar edges.

A blank for the hinge-lid box also features a special configuration in the region of the base wall and end face. This also applies to the production of the hinge-lid box by folding the blank. The latter has grooved embossments in the region of the contoured longitudinal edges and/or transverse edges which can be applied during the industrial manufacture of the blanks or in the region of the packaging machine. The procedure is such that the blank has molded or embossed grooves having a semi-circular cross-section. Depending on the form of the pack edges to be produced (projection or recess), the folding tabs are folded in one direction or the other, thereby producing from the semicircular reinforcing seam a (circular) projection with reduced radius or a (quarter-circle) recess with an enlarged radius.

Further special features of the hinge-lid box and the blank for producing same are explained below in more detail on the basis of exemplary embodiments featured in the drawings, which show:

- Fig. 1 perspective view of a hinge-lid pack with formed upright longitudinal edges in the closed position,
- Fig. 2 the pack pursuant to Fig. 1 with open lid,
- Fig. 3 another exemplary embodiment of a hinge-lid pack in a view corresponding to Fig. 1,
- Fig. 4 a partial cross-section IV-IV of the hinge-lid pack according to Fig. 1 on an enlarged scale,
- Fig. 5 a partial cross-section analogous to Fig. 4 for the exemplary embodiment according to Fig. 3,
- Fig. 6 a blank for hinge-lid pack in the embodiment pursuant to Fig. 1, Fig. 2 or Fig. 3, in its spread-out view,
- Fig. 7 a region of the blank (dot-dash lines) pursuant to Fig. 6, on an enlarged scale,
- Fig. 8 a partial cross-section VII-VII in Fig. 6,

- Fig. 9 an intermediate folding position of part of the blank, namely the detail pursuant to Fig. 8,
- Fig. 10 a view analogous to Fig. 9 for the exemplary embodiment of Fig. 1, Fig. 2,
- Fig. 11 perspective view of a collar for a hinge-lid pack pursuant to Fig. 1, Fig. 2 or
5 Fig. 3,
- Fig. 12 perspective view of a hinge-lid pack pursuant to a further exemplary embodiment with shaped transverse edges,
- Fig. 13 a spread-out view of a blank for a hinge-lid pack pursuant to Fig. 12,
- Fig. 14 a vertical sectional view through a portion of the hinge-lid pack pursuant to
10 Fig. 12 in the sectional plane XIV-XIV, on an enlarged scale,
- Fig. 15 a sectional view through a portion of the blank pursuant to Fig. 13 in the sectional plane XV-XV.

Standard hinge-lid packs comprise a (lower) box part 10 and an (upper) lid 11. In addition, a collar 12 is a constituent part of the hinge-lid pack. Box part 10 and lid 11 are connected
15 to each other by pivoting hinge-line 13 on the rear side. Box part 10 and lid 11 are thus formed from a common blank (e.g. Fig. 6). In the present case, the pack contents is a cigarette group 48, which is enclosed by an inner liner 49.

The blank for the hinge-lid pack is configured in the shown exemplary embodiments such that the delimited regions for forming a box front wall 14, base wall 15, box rear wall 16, lid
20 rear wall 17, end wall 18 and lid front wall 19 follow one another in succession. Attached to the free edge of the lid front wall 19 is a lid inner tab 20, which in the finished hinge-lid pack is folded against the inner side of the lid front wall 19.

For the formation of box side walls 21 and lid side walls 22, side tabs are attached to the aforementioned walls, specifically inner box side tabs 23 and outer box side tabs 24.
25 Corresponding inner lid side tabs 25 and outer lid side tabs 26 are provided in the region of the lid. The box side tabs 23 and 24 overlap one another to form the box side walls 21. Correspondingly, the lid side tabs 25, 26 are overlapped and connected to one another to form the lid side walls 22.

Additional folding tabs are attached to the inner box side tabs 23 and to the inner lid side
30 tabs 25, namely base corner tabs 27, on one hand, and end corner tabs 28, on the other.

In the finished hinge-lid pack these folding tabs lie against the inner side of the base wall 15 and the inner side of the end wall 18, respectively.

The side folding tabs 23, 24, 25, 26 are delimited from the walls 14, 16, 17, 19 by means of folding lines, namely by longitudinal folding lines, which in the finished, cuboid-shaped pack (e. g. Fig. 1) form upright pack edges, specifically longitudinal edges 29, 30. These extend in the region of the box part 10 and lid 11.

The box front wall 14, on one hand, and the box rear wall 16, on the other hand, are delimited from the base wall 15 by transverse folding lines which in the finished pack form horizontal transverse edges 31, 32 that in any case run transverse to the longitudinal edges 29, 30. Correspondingly, transverse edges 33, 34 are formed in the region of the lid 11 for the purpose of delimiting the end wall 18 from the lid rear wall 17 on one hand, and the lid front wall 19, on the other.

The longitudinal edges 29, 30 on one hand, and the transverse edges 31...34 on the other are formed in a special manner by means of material deformation or embossment. According to the exemplary embodiment of Fig. 1 and Fig. 2, the upright longitudinal edges 29, 30 are formed as outwardly directed projections 35 with a round cross-section. In the special exemplary embodiment shown, these are projections 35 having a cross-section in the shape of a pitch circle, namely in the form of a three-quarter circle. The projection 35 is attached at either side by means of an intermediate edge 36, 37 to the adjacent walls and folding tabs. The longitudinal edges 29, 30, configured as a projection 35 in the shape of a pitch-circle, extend in the region of the box part 10 and continue uninterrupted in the region of the lid 11, specifically in the region of all four longitudinal edges 29, 30.

The blank (Fig. 6) is prepared for the production of a hinge-lid pack pursuant to Fig. 1 and Fig. 2. Expediently, a deformation is made during the production of the blank in the region of the longitudinal edges 29, 30 which in the present exemplary embodiment is an embossment 46 in the shape of a semicircle (Fig. 8). In addition, the blank has a special configuration in the region of the base corner tabs 27 and end corner tabs 28 (Fig. 7). The corner tabs 27, 28 concerned are shortened by a punching 38 which forms a space between the appropriate corner tab 27, 28 and the adjacent folding tab. Furthermore, the deformations or embossments 46 for forming the projections 35 are limited at their ends by a transverse severing cut 39, which extends beyond the width of the projection, thus

enabling a stress-free deformation of the projection 35 during the folding process relative to the base wall 15 or end wall 18.

The folding tabs of the box side walls 21 and lid side walls are dimensioned such that they overlap in a region between the associated projections 35, i.e. extend from intermediate edge 36 to intermediate edge 37.

In the exemplary embodiment pursuant to Fig. 3, the upright longitudinal edges 29, 30 of the hinge-lid pack are configured as a recess 40. Its cross-section also has a curved or circular shape, specifically with the dimensions of a quarter-circle. Here the intermediate edges 36, 37 are directed outwards.

One special feature is that practically identical blanks in the form pursuant to Fig. 6 can be used for the pack shape pursuant to Fig. 1, Fig. 2, on one hand, and Fig. 3, on the other hand. In each case, the molded, fluted embossments 46 are provided in the region of the projections 35 or recesses 40 to be formed, specifically with a bulge on the printed side of the blank for the production of projections 35 and with a bulge on the unprinted inner side for the production of recesses 40.

The projections 35 or recesses 40 are produced in a particularly simple manner. The embossment 46, having an (approximately) semicircular cross-sectional shape, is shaped by the folding of a folding tab, namely in particular by the folding of the box side tabs 23, 24 and by the lid side tabs 25, 26 into a position transverse to the adjacent pack walls to form a projection 35 or recess 40. Pursuant to Fig. 9, an embossment 46 of Fig. 8 yields a quarter-circle recess 40, whose dimension (radius) is somewhat larger than the corresponding dimension of the embossment 46. When said folding tab is folded to form projections 35, the result is a decrease in the dimensions of the three-quarter circle thereby created (Fig. 10). With respect to Fig. 8, it holds that the embossment 46 is directed toward one side of the blank or the other, depending on the shape of the pack edge to be produced.

The dimensions of the embossments 46, on one hand, and of the projections 35 or recesses 40, on the other hand, can be selected according to the desired design. Advantageous in this respect are dimensions of the projections 35 or recesses 40 having a radius r of 1.5 mm to 4 mm.

The collar 12 can be configured to correspond to one or the other embodiments of the hinge-lid pack. As usual, the collar 12 comprises collar front wall 41 and lateral, transversely-folded collar flaps 42. Formed between them are upright collar edges 43, 44, which are associated with the longitudinal edges 29, 30 on the front side. As shown to the left in Fig. 11, the collar 12 for a hinge-lid pack pursuant to Fig. 1 and Fig. 2 has collar edges 43 which are configured as a projection having a cross-section shape of a three-quarter circle. The dimensions of the collar edges 43, or projections, conform to the dimensions of the projections 35 of the longitudinal edges 29, 30.

Analogously, the collar 12 pursuant to that shown to the right in Fig. 11 is configured for a pack embodiment according to Fig. 3, namely having collar edges 44 which are designed as quarter-circle recesses. Due to the geometric correlations, a well-adapted design of the collar edges 44 is important for this pack (Fig. 3). For the pack pursuant to Fig. 1 and Fig. 2, it is possible to use a conventional collar with collar edges having a right-angle cross-section.

As an alternative or in addition, individual or even all transverse edges 31...34 can be shaped in order to form either a projection 35 of the described embodiment or a recess 40. Fig. 12 to Fig. 15 show details of a hinge-lid pack in which all four transverse edges 31...34 of the box part 10 and lid 11 have been formed with projections 35 that extend across the full width of the hinge-lid pack.

The blank (Fig. 13) is configured such that the transverse folding lines, or transverse edges 31...34 are provided with an (approximately) semicircular-shaped reinforcing seam 47 formed by shaping or embossment. When the box front wall 14 and box rear wall 16 are folded relative to the base wall 15, and when the lid front wall 19 and lid rear wall 17 are folded relative to the end wall 18, said reinforcing seam 47 forms round projections 35 having a cross-section of a three-quarter circle (Fig. 14). As an alternative, the transverse edges 31...34 of the hinge-lid pack can be configured as recesses, analogous to the recesses pursuant to Fig. 9. However, this embodiment requires that the pack contents are adjusted to conform to the reduced inner dimensions of the hinge-lid pack.

One special feature is the configuration of the base corner tabs 27 and end corner tabs 28. Due to a punching 45 and because of their reduced width compared to the adjacent box side tabs 23 and lid side tabs 26, said corner tabs are configured such that in the finished pack they lie properly, and in any case centered, between the formed transverse

edges 31...34. In this exemplary embodiment (Fig. 13) of the blank, the inner folding tabs 23, 25, 27, 28 are continuously configured with the same width which is reduced with respect to the folding tabs 24, 26.

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List of designations

10	box part	34	transverse edge
11	lid	35	projection
12	collar	36	intermediate edge
13	hinge line	37	intermediate edge
14	box front wall	38	punching
15	base wall	39	severing cut
16	box rear wall	40	recess
17	lid rear wall	41	collar front wall
18	end wall	42	collar flap
19	lid front wall	43	collar edge
20	lid inner tab	44	collar edge
21	box side wall	45	punching
22	lid side wall	46	embossment
23	box side tab, inner	47	reinforcing seam
24	box side tab, outer	48	cigarette group
25	lid side tab, inner	49	inner liner
26	lid side tab, outer		
27	base corner tab		
28	end corner tab		
29	longitudinal edge		
30	longitudinal edge		
31	transverse edge		
32	transverse edge		
33	transverse edge		